Listing of Claims

1. ~ 6. (Canceled)

7. (Currently Amended) A multi-modal browser, comprising:

a plurality of modality-specific browsers, and

a multi-modal shell that parses and processes a modality-independent representation of an application to generate modality-specific representations of the application which are rendered by corresponding modality-specific browsers to generate modality-specific views of the application, and to manage synchronization of I/O (input/output) events across each modality-specific view,

wherein each modality-specific browser comprises:

an API (application programming interface) that enables the multi-model shell to contol the browser and access events; and

a wrapper interface that support synchronization between the modality-specific views by event filtering and exhchanging synchronization information between the multi-modal shell and the browser,

wherein the multi-modal shell comprises:

a model manager for maintaining a dialog state of the application;

a TAV (transformation/adaption/view preparation) manager for preparing and transforming pages or page snippets; and

a synchronization manager for managing event notifications to the browsers.

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8. (Previously Presented) The multi-modal browser of claim 7, wherein the API for a modality-specific browser comprises a DOM (document object model) interface.

9. (Original) The multi-modal browser of claim 8, wherein the wrapper interface comprises methods for DOM event filtering.

10. (Original) The multi-modal browser of claim 7, wherein the multi-modal shell maintains and updates a dialog state of the application.

11. (Original) The multi-modal browser of claim 7, wherein the multi-modal browser comprises a fat client framework.

12. (Original) The multi-modal browser of claim 7, wherein the multi-modal browser comprises a distributed framework.

13. (Canceled)

14. (Currently Amended) The multi-modal shell of claim 7 ~~13~~, wherein the multi-modal shell comprises a distributed framework.

15. (Previously Presented) The multi-modal browser of claim 7, wherein the plurality of modality-specific browsers comprise a WML (wireless markup language) browser and a VoiceXML browser.

16. (Original) The multi-modal browser of claim 15, further comprising an audio system for capturing and encoding speech data, and a plurality of speech engines for processing speech data.

17. (Canceled)

18. (Currently Amended) The WAP multi-modal browser of claim 20 ~~17~~, wherein the GUI browser comprises a WML (wireless markup language) browser and wherein the voice browser comprises a VoiceXML browser.

19. (Canceled)

20. (Currently Amended) ~~The WAP multi-modal browser of claim 19, further comprising~~ A distributed WAP (wireless application protocol) multi-modal browser system, comprising:

a GUI (graphical user interface) browser that resides on a client device, wherein the GUI browser comprises a DOM (document object model) interface for controlling the GUI browser and managing DOM event notifications, and a wrapper interface for filtering events;

a speech application server comprising:

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a voice browser, wherein the voice browser comprises a DOM interface

for controlling the voice browser and managing DOM event notifications, and a

wrapper interface for filtering events; and

an audio system for capturing and encoding speech data; and one or more

speech engines for processing speech data,

wherein the speech application server is distributed over a network;

a multi-modal shell system for parsing and processing a modality-independent application

and managing synchronization of I/O (input/output) events between the GUI and voice browsers;

and

a communication manager that employs protocols for transporting encoded voice data to

the speech engines and protocols for enabling synchronization of the GUI browser.

21. (Currently Amended) The WAP multi-modal browser of claim 20 19, wherein the

speech application server supports protocols for enabling remote control of the engines for server

side speech processing.

22. (Currently Amended) The WAP multi-modal browser of claim 20 19, wherein the

multi-modal shell system is distributed over the network.

23. (Previously Presented) A multi-modal browser, comprising:

a plurality of modality-dependent browsers, and

a multi-modal shell for parsing and processing a modality-independent application and managing synchronization of I/O (input/output) events across each view generated by the plurality of modality-dependent browsers,

wherein each modality-dependent browser comprises:

an API (application programming interface) for controlling the browser and for managing events; and

an external wrapper interface comprising synchronization protocols for supporting synchronization of the browser, and

wherein the multi-modal shell comprises:

a model manager for maintaining a dialog state of the application;

a TAV (transformation/adaption/view preparation) manager for preparing and transforming pages or page snippets; and

a synchronization manager for managing event notifications to the browsers.